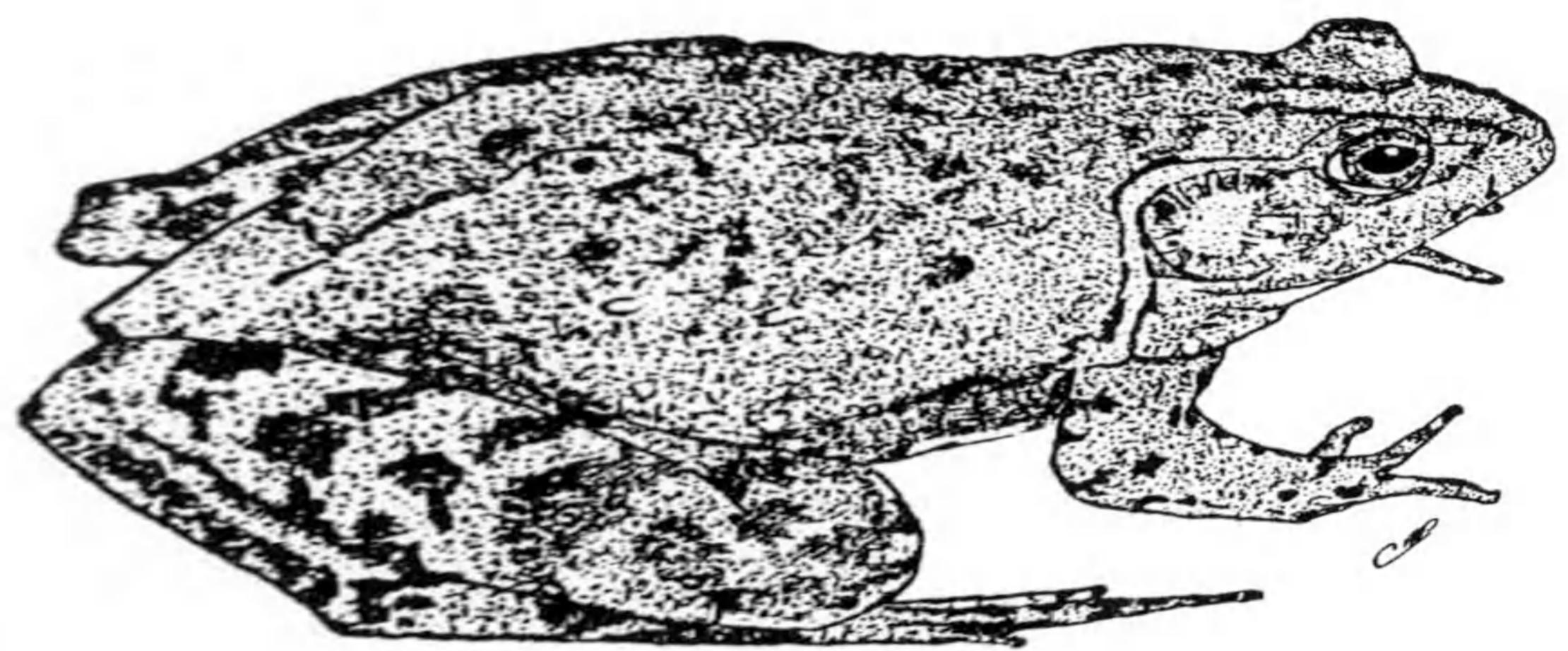


CATESBEIANA



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BULLETIN INFORMATION

Catesbeiana is issued twice a year by the Virginia Herpetological Society. Membership is open to all individuals interested in the study of amphibians and reptiles and includes a subscription to *Catesbeiana* and admission to all meetings.

Dues are \$5.00 per year and include a subscription to *Catesbeiana* numbers 1 and 2 for that year. Dues are payable to: Ronald Southwick, Secretary-Treasurer, 5608 Parkland Ct., Virginia Beach, VA 23464.

EDITORIAL POLICY

The principle function of *Catesbeiana* is to publish observations and original research about Virginia herpetology. Rarely will articles be reprinted in *Catesbeiana* after they have been published elsewhere. All correspondence relative to suitability of manuscripts or other editorial considerations should be directed to Paul Sattler, Editor, Department of Biology, Liberty University, Box 20,000, Lynchburg, VA 24506.

Major Papers

Manuscripts being submitted for publication should be typewritten (double spaced) on good quality 8½ by 11 inch paper, with adequate margins. Consult the style of articles in this issue for additional information. Articles will be refereed by at least one officer (past or present) of the Virginia Herpetological Society in addition to the editor. All changes must be approved by the author before publication; therefore manuscripts must be submitted well in advance of the March or September mailing dates.

Reprints of articles are not available to authors; however, authors may reprint articles themselves to meet professional needs.

(Editorial policy continued on inside back cover.)

CATESBEIANA
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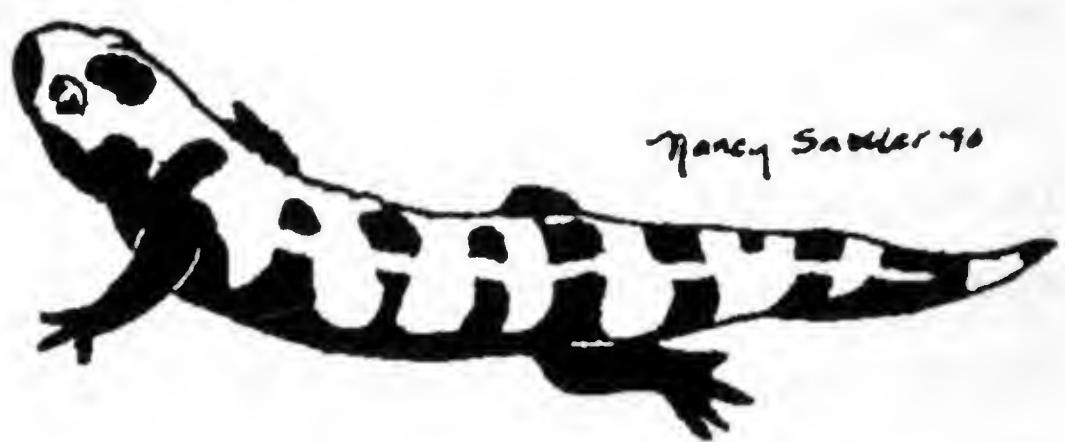
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MEETING NOTICE

The Fall 1990 VHS meeting will be held on October 20 at Maymont Park in Richmond, VA. See page 64-66 for details.



Contributions to the History of Virginia Herpetology II:
John B. Lewis' "List of Reptiles Observed in Amelia, Brunswick,
and Norfolk Counties"

Joseph C. Mitchell
Department of Biology
University of Richmond
Richmond, Virginia 23173

The Virginia naturalist John B. Lewis (1868-1957) wrote several unpublished manuscripts on amphibians and reptiles in the 1930s. These were based on natural history observations he made in southern Virginia while county extension agent in Amelia County and naturalist for the Seward Experimental Forest. The first one, on amphibians, published by Mitchell (1990), contained a brief biography of Lewis and a discussion of how his observations contributed to Virginia herpetology.

The second Lewis manuscript, published for the first time here, contains his observations on the reptiles of southern Virginia. Observations listed in this manuscript may have stemmed from Lewis' employment in 1937-1938 by the Wildlife Research Unit of (the then) Virginia Polytechnic University for whom he conducted plant and animal surveys in Amelia County (Lewis, 1940). Most of the observations are from Amelia, although others from earlier years and his residence in Brunswick County were included.

Lewis' observations provide information on several reptilian species in an area of Virginia that remains understudied. They allow an historical perspective on how these animals were perceived by naturalists and lay persons in the late 1930s or early 1940s when this manuscript was presumably written (the manuscript is undated). The manuscript is reproduced here in its entirety. Only misspellings have been corrected and current scientific names added in brackets where necessary.

"Order Squamata
Suborder Sauria

Not enough work has been done with the lizards to warrant an attempt to list them scientifically, with the exception of the one species

given below.

Family Anguidae

Glass Snake, or Joint Snake, *Ophisaurus ventralis* [*O. attenuatus*]

Amelia. Three records since April 1930. August 12, 1931: A friend brought me a specimen that had been killed near Winterham. Its total length was 22.5 inches. Length from nose to vent, 12 inches. One and one fourth inches of the tail had evidently been recently renewed, as it was almost white and very blunt, though smooth.

June 30, 1933: I found a specimen on the bank of Amelia Branch a half mile below the village. It was not collected. It was about 20 inches long.

November 5, 1934: One was killed near Paineville and brought to the village. It had a section of the tail 4 1/4 inches long that was obviously a "second growth." There was a distinct shrinkage in diameter where it started and the color lines on the original part of the tail did not extend onto it.

Brunswick. About the same as Amelia. Rare if infrequency of records is any indication.

Suborder Serpentes

Family Colubridae

Horned Snake, *Farancia abacura*

Norfolk County [City of Norfolk]: August 17, 1904. A specimen was killed in a "fern brake" on the border of the Dismal Swamp, and was carefully studied. It was 4 feet 4 inches long. The tail ended in a hard, horny cone that was moderately sharp pointed. The negroes considered it a very deadly snake, who's venom is administered vis. the horn on the tail.

Ring-Necked Snake, *Diadophis punctatus*

Brunswick. Specimens taken occasionally under logs and chunks.

Norfolk. Same as for Brunswick.

Spreading Adder, *Heterodon contortrix* [*Heterodon platirhinos*]

Amelia. Fairly common as compared with the other snake populations, which is small.

Brunswick. Probably more numerous than in Amelia.

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Rough Green Snake, *Ophiodrys aestivus*

Amelia. Not common. I have probably seen on the average of two a year during my 8 summers here.

Brunswick. A green snake, probably of this species, was seen occasionally.

Norfolk. Green snakes, doubtless of this species, were more common than in Amelia and Brunswick.

Black Snake, "Blue Racer." *Coluber constrictor*

Amelia. One of our most common snakes.

Brunswick. Common

Pilot Black Snake, *Elaphe obsoleta*

Amelia. Our most numerous dry land snake.

Brunswick. Most numerous dry land snake. One killed near Meherrin River on east central Brunswick July 9, 1925 was 6 feet 11 inches long.

Chain Snake, *Lampropeltis getulus getulus* [*Lampropeltis getula getula*]

Amelia. One taken in south east part of county May 18, 1932.

Brunswick. No record.

Milk Snake, *Lampropeltis triangulum*

Amelia. A 41 inch specimen taken near Amelia Village May 15, 1931.

Brunswick. A 33 inch specimen taken in south east part of county May 16, 1922.

Scarlet King Snake, *Lampropeltis elapsoides* var. *virginiana* [*Lampropeltis triangulum triangulum* x *elapsoides* intergrade]

Amelia. A 6 1/2 inch specimen taken in her dooryard by Mrs. Fred Robertson, in the Bracket's Bend section, north side of the county, was brought to me for identification Sept. 3, 1935. I traced it to this species, but to make sure it was not *Micruurus fulvius*, I sent it to Dr. Ditmars of the Bronx Zoo Park, who pronounced it *Lampropeltis elapsoides virginiana*.

Water Snake, Queen Snake, *Natrix septemvittata* [*Regina septemvittata*]

Amelia. Water snakes are common about ponds and streams but no specimens have been taken, so species are not known.

Brunswick. One collected Sept. 22, 1921.

Banded Water Snake, *Natrix fasciata* [*Nerodia sipedon*]

Brunswick. A 3 foot specimen taken March 29, 1922. Water snakes, probably of one or both these species are very common about ponds and streams.

Garter Snake, *Thamnophis sirtalis*

Amelia. Garter snakes are seen occasionally, but have not been keyed out. They are probably of this species.

Brunswick. Not common. The two specimens keyed out were of this species.

Family Crotalidae [Viperidae]

Copperhead, *Agkistrodon mokason* [*Agkistrodon contortrix mokason*]

Ameila. Very rare. Only two seen in the eight summers spent in the county.

Brunswick. Locally common in woods, seeming to prefer low lands along streams. In January 1912 we moved to a farm that had been badly neglected and allowed to grow up with bushes and weeds. The next summer 6 copperheads were killed about the farm buildings and yard.

July 21, 1926: A specimen 41 1/2 inches long was killed in the Meherrin River lowgrounds in the east central part of the county.

Norfolk. Common in thickety places away from swamps.

Water Moccasin, *Agkistrodon piscivorus*

At the time of our residence on the border of the Dismal Swamp between Portsmouth and Suffolk, November 1903 to December 1911, these snakes were quite common in and around the border of swamp. I killed and closely examined a number of specimens during this time, most of which were taken along the headwaters of the western branch of the Elizabeth River, on the border of the swamp. It is an aggressively vicious snake, and probably more dangerous than the rattlesnake.

Diamond Rattlesnake, *Crotalus adamanteus* [*Crotalus horridus atricaudatus*]

Norfolk County. Rattlesnakes that I believe to have been of this species were fairly common in and around the border of the Dismal Swamp at the time of our residence there. In June 1905, while supervising a gang of colored laborers that were digging potatoes in a field on the edge of the swamp, a 4 foot rattler was located by the

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workers. Another white man and I captured it alive by getting forked sticks over its neck until a good grip could be had on its throat. While the other man held it I extracted its fangs and we kept it in a cage until new ones began to appear, when it was killed.

Order Testudinata

Suborder Cryptodira

Family Kinosternidae

Musk Turtle, *Sternotherus odoratus*

Amelia. Not common. Occasionally travels overland in early spring. One picked up on highway April 10, 1930.

Brunswick. Doubtless present, but none examined.

Mud Turtle, *Kinosternon subrubrum*

Amelia. Common in ponds and sluggish streams.

Brunswick. Common in ponds and sluggish streams.

Family Chelydridae

Snapping Turtles, *Chelydra serpentina*

Amelia. Abundant in the larger ponds and streams.

Brunswick. Common in the larger ponds and streams.

Family Testudinidae [Emydidae]

Speckled Tortoise, *Clemmys guttata*

Amelia. One specimen taken, Nibbs Creek, April 11, 1935.

Common Box Turtle, *Terrapene carolina carolina*

Amelia. Common in woodlands.

Brunswick. Common in woodlands.

Painted Turtle, *Chrysemys picta* [*Chrysemys picta*]

Amelia. Common in ponds and swamps. Sometimes travels overland in spring.

Brunswick. Same as for Amelia.

Barred Terrapin, *Pseudemys concinna*

Brunswick. One caught in the Meherrin River just below the old

Westward Mill dam, in the east central part of the county, July 6, 1927."

Discussion

Lewis noted on the last page of his manuscript that he had used the 13th edition (1929) of David Starr Jordan's field guide for the northeastern United States. Various editions of this book was used extensively by Lewis during most of his lifetime (Mitchell, 1990 and unpublished) and were apparently the only sources he used for field identification. Lewis appears not to have referred to the primary literature for his information on amphibians, reptiles, or any other animal group. His common and scientific names were from Jordan's field guides, although local vernacular names were included when he knew them.

Lewis apparently made only one incorrect identification, the canebrake rattlesnake as a diamondback. The nearest known locality for *Crotalus adamanteus* is in Jones County, North Carolina (A.L. Braswell and W.M. Palmer, pers. comm.). His misidentification was made in 1905 at a time when he was unfamiliar with Virginia's snakes.

All of the eight species of snakes Lewis observed in Amelia County, except one (*Ophiodrys aestivus*), have been verified with museum specimens (Tobey, 1985; Mitchell and Pague, in prep.). Clifford (1976) provided the only literature record for rough green snakes. Lewis observed nine snake species in Brunswick County. Of these, five (*Coluber constrictor*, *Diadophis punctatus*, *Heterodon platirhinos*, *Lampropeltis triangulum*, and *Nerodia septemvittata*) are county literature records (Tobey, 1985; Mitchell and Pague, in prep.). The queen snake observation represents a substantial southeastward range extension (Tobey, 1985; Merkle, 1987) and should be verified.

One species of freshwater turtle, *Clemmys guttata*, seen by Lewis at Nibb's Creek, has not heretofore been recorded for Amelia County (Tobey, 1985; Mitchell and Pague, in prep.). Three commonly encountered species (*Chelydra serpentina*, *Kinosternon subrubrum*, and *Terrapene carolina*) were observed by Lewis in Brunswick County but were not recorded by Tobey (1985) or Mitchell and Pague, in prep.).

Comparisons of these observational records with museum based records (Tobey, 1985; Mitchell and Pague, in prep.) support the

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perception that southcentral Virginia has been inadequately surveyed. Numerous species of both amphibians (Mitchell, 1990) and reptiles (this paper) require permanent verification. Such surveys are today crucial endeavors because of the rate of habitat loss in many counties in this area of Virginia (Mitchell, pers. obs.).

Acknowledgments

I am grateful to Christina Bolgiano for introducing me to the University of Virginia Archives where Lewis' manuscripts are housed among the papers of the Seward Forest Archives (#10,026). Permission to reproduce this manuscript was given by the Curator of Manuscripts/University Archivist of the Alderman Library.

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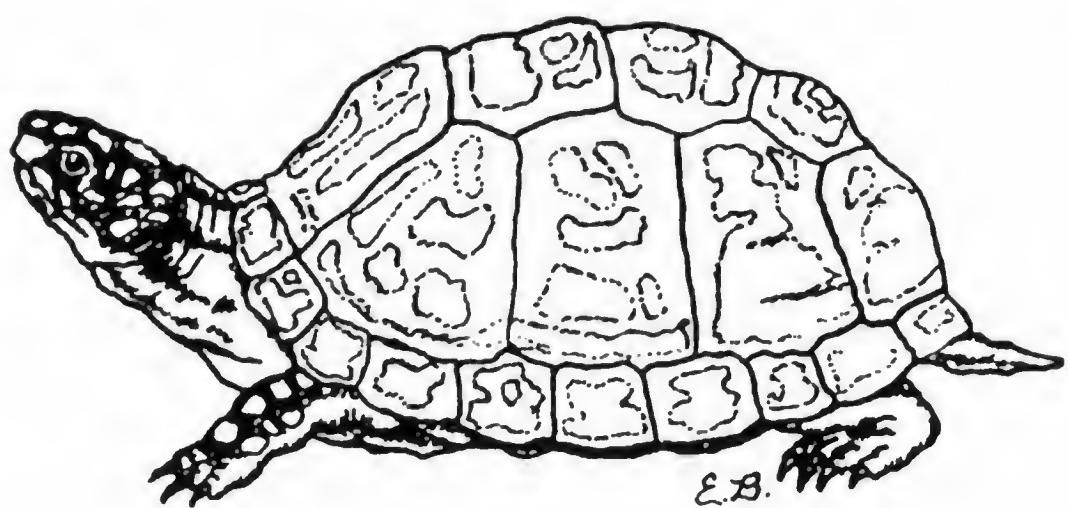
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FIELD NOTES

Gastrophryne carolinensis carolinensis (Eastern Narrow-Mouthed Toad): VA: Pittsylvania Co. Va. Hy. 859, 0.96 km S of Cascade P.O., May 1990; also 0.8 km S int. 622 on Va. Hy. 856, same date; R.L. Hoffman.

Both specimens found on pavement during rain, following afternoon of high temperature and thunderstorms. Cascade specimen alive photographed; the other a roadkill in good condition, preserved (VMNH). Specimens were calling at the Cascade site and in a pond beside Va. Hy. 846, ca. 3.36 km SE of Aiken Summit on June 13, 1990, after heavy rain, both in company of *Hyla chrysoscelis*. All three localities are within a two mile radius of Cascade, at the western edge of the Triassic lowland.

These records establish a new county for this species, and represent its inland-most Piedmont station, about 100 km west of the Mecklenburg County site shown by Tobey (1985, Virginia's Amphibians and Reptiles: A distributional survey, Privately published, Virginia Herpetol. Soc., Purcellville, VA, p. 62.). *G. carolinensis* appears to be widely but sparsely distributed in southside Virginia, possibly due to a relictual status or to a lack of searching in the right places at the right time. The western boundary of its range in the Piedmont seem to approximate that of the sweetgum *Liquidambar styraciflua*, at least south of the James River.

Richard L. Hoffman
Virginia Museum of Natural History
Martinsville, VA 24112

Rana utricularia (Southern Leopard Frog): VA: Pittsylvania Co. Va. Hy. 880, ca. 0.4 km S of int. with VA 863 at Berry Hill, R.L. Hoffman.

Roadkill specimens found 28 May 1990 (juvenile) and 10 July 1990 (adults) along road traversing low marshy woods in Dan River floodplain. Three specimens preserved (VMNH) with typical pattern of elongate-oval dorsal spots; another very large adult, collected but not retained, almost uniformly rich green dorsally with no traces of spots.

This locality is not only a new county record for the species, but is a substantial westward extension of the known range (cf. Tobey, 1985, Virginia's Amphibians and Reptiles: A distributional survey, Privately published, Virginia Herpetol. Soc., Purcellville, VA, P. 65) from

FIELD NOTES

Mecklenburg and Charlotte counties. Presumably *R. utricularia* occurs chiefly, if not exclusively, along the floodplains of larger rivers in the western Piedmont, as it was not seen away from the above-cited locality on the same rainy nights when anurans of other species were widespread and very abundant in the same region. Collectors should be challenged to investigate floodplain ponds and swamps (and adjacent pavements) elsewhere in the southern Piedmont of Virginia.

Richard L. Hoffman
Virginia Museum of Natural History
Martinsville, VA 24112

Storeria o. occipitomaculata (Northern Red-bellied Snake): VA: Campbell Co.: Co. Rt. 677, 1.6 km N of Co. Rt. 670 at Camp Hydaway, ca. 5 km SE of Lynchburg, 15 May 1990, Paul Sattler.

A single specimen found under rocks along trail about 0.1 km west of Hydaway Lake. The specimen was photographed and preserved (Will be deposited in the Carnegie Museum via Joe Mitchell). This locality is a new county record for the species (Tobey, 1985, Virginia's Amphibians and Reptiles: A Distributional Survey, Privately Published, Virginia Herpetol. Soc., Purcellville, VA, p. 83).

Paul W. Sattler
Liberty University
Lynchburg, VA 24506

Aneides aeneus (Green Salamander): VA: Wythe County: South side of Va. Rt. 717, midway between U.S. Rt. 52 and Interstate 77. Stony Fork area. 25 October 1975. Fred First.

While examining and cataloging an assortment of preserved amphibians and reptiles, a new county record for *Aneides aeneus* was discovered. The specimen was found 20 feet above the ground, under the bark of a tree, being cut for firewood. This species has not previously been recorded from Wythe County according to Tobey (1985, Virginia's Amphibians and Reptiles: A Distributional Survey, Privately Published, Virginia Herpetol. Soc., Purcellville, VA, 114 pp.), Mitchell (pers. comm.) and Hoffman (pers. comm.).

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The easternmost records of this species are two specimens collected by Richard Hoffman from Burkes Garden in Tazewell County on August 30, 1963 (USNM 150943-150944) and a specimen collected near Mechanicsburg in Bland County. The current specimen represents a southeastern range extension of approximately 18 km from the Tazewell County locality and a south-southwestward extension of approximately 26 km from the Bland site. The specimen is in the collection of the Biology Department of Wytheville Community College in Wytheville, Virginia.

Dr. Donald W. Linzey
Dept. of Biology
Wytheville Community College
Wytheville, VA 24382

Psuedotriton m. montanus (Eastern Mud Salamander): VA: Greene Co.: Swift Run ca. 10 m W of US 33, 19.2 km W of US 29, ca. 9 km W of Stanardsville, 14 June 1990, R. Terry Spohn.

One larva with adult coloration found under rocks in Swift Run. The single specimen was photographed and preserved (Carnegie Museum via Joe Mitchell). Occurring in and along the stream were also larval and adult *Gyrinophilus porphyriticus*, larval and adult *Eurycea bislineata*, adult *Desmognathus monticola*, *D. fuscus*, and *Plethodon cinereus*.

This specimen is both a new county record and a significant westward extension of about 65 km beyond its western range in Hanover Co. (Tobey, 1985, Virginia's Amphibians and Reptiles: A distributional Survey, Privately Published, Virginia Herpetol. Soc., Purcellville, VA, p. 49). Although it is possible that this is a relict population from a previously larger range, it would appear prudent to search suitable habitats for intermediate populations.

R. Terry Spohn and Paul W. Sattler
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ABSTRACTS

The following abstracts are from the First World Congress of Herpetology (Canterbury, England, September 11-19, 1989).

GEOGRAPHIC VARIATION IN FEMALE REPRODUCTIVE ECOLOGY OF THE TIMBER RATTLESNAKE, *CROTALUS HORRIDUS*

Brown, W.S. and W.H. Martin, Department of Biology, Skidmore College, Saratoga Springs, NY 12866 and Rt 3, Box 804, Harpers Ferry, WV 25425

Female reproduction in *Crotalus horridus* was investigated at two localities, New York (NY) and Virginia (VA), in deciduous forests of eastern North America. At these sites, long-term mark and recapture field studies on the life history of this species are being conducted. Ages were estimated by recapturing adults marked initially as immatures and by measuring growth rate of the rattle. Three reproductive parameters in the two populations were compared over a 7-yr. period, 1981-1987. These were: (1) proportions of females reproductive, (2) reproductive cycle lengths, and (3) ages of first reproduction. Proportions of mature females gravid each year ranged from 18-51% in VA ($n=200$) and from 27-75% in NY ($n=348$). There were wide annual fluctuations in this parameter which were not synchronous between the two sites. Most females in both populations reproduced at 3-yr intervals (58% triennial of 36 cycles in VA, 57% triennial of 30 cycles in NY) and a substantial proportion reproduced at 4-yr intervals (28% quadrennial in VA, 27% quadrennial in NY). Biennial cycles were not observed in the NY population and were rare in VA ($n=3$, 8%). Age of first reproduction ranged from 5 to 10 yr. in VA (modal ages 8 and 9 yr., 47% of 164 females) and from 7 to 11 in NY (modal ages 9 and 10 yr., 62% of 31 females). Mean age of first reproduction was 8.1 yr. (VA) and 9.3 yr. (NY). In this species, apparently a high fecundity-independent cost of viviparity has selected for a life-history pattern of delayed maturity and low-frequency reproduction. Moderate geographic variation in the reproductive parameters occurs within this life history pattern.

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THE TIMBER RATTLESNAKE, *CROTALUS HORRIDUS* IN THE APPALACHIAN MOUNTAINS OF EASTERN NORTH AMERICA.
Martin, W.H., Rt. 3, Box 804, Harpers Ferry, WV 25425

The life history of *Crotalus horridus* was investigated by mark-recapture in northwestern Virginia and nearby areas, during the years 1973 to 1988, with supplemental sampling data from 1956 to 1971. Observations were made at 509 sites on 5195 rattlesnakes, including 1271 neonates. Adult males averaged 1080 (840-1290) mm TL and females averaged 940 (730-1100) mm. Neonates averaged 280 mm. Juveniles averaged 430 mm at one year, 580 mm at two years, and 700 mm at three years. Young averaged 1.8 molts per year for the first five years. Adult males thereafter averaged 1.3 molts per year and adult females averaged 1.2. Communal-ancestral dens and birthing rookeries located in ledges and talus serve as focal points for each den-colony (deme) which can contain as many as 200 individuals. Snakes hibernate from October to April. Average migration distances are estimated at 2.45 km for adult males; 2.16 km for non-gravid females; 0.5 km for gravid females; and 1.73 km for juveniles. Food is mainly small rodents taken by ambush. Mating occurs from late July to mid September with young born the following year in August and September. Females bear first young at 5 to 10 years of age and thereafter at 2 to 5 year intervals. On the average 22.5% of adult-age females reproduce but the proportion can range from 10% to 50%. Number of young per litter averages 8 (4-16). Neonates stay with the mother for 7 to 10 days. Mortality is estimated at 61% for the first year, 40% for the second, 25% for the third, 17.5% for the fourth, 10% from the fifth to the fourteenth year for females and the fifth to the seventeenth for males. Mortality increases to 20% for females and to 12% for males at 24 years. The timber rattlesnake is an important predator in the deciduous biome of eastern North America. Among snakes, it represents an extreme in K-selection. Because of its demographic characteristics, communal denning and gestation habits, and rather long-distance migration between den and summer range, is vulnerable to human exploitation and development.

ABSTRACTS

DISTRIBUTION OF MARINE TURTLES (*Caretta caretta*, *Chelonia mydas*, *Dermochelys coriacea*, AND *Lepidochelys kempi*) IN VIRGINIA AND ADJACENT WATERS.

Barnard, D.E., J.A. Keinath, AND J.A. Musick, Virginia Institute of Marine Science, College of William and Mary, Gloucester Pt, VA

The VIMS sea turtle research project has recorded occurrences of dead and live sea turtles from VA and adjacent waters since 1979. Through aerial surveys and remote sensing we estimate up to 10,000 loggerhead turtles (*Caretta caretta*) utilize Chesapeake Bay as a summer foraging ground, and are the most abundant sea turtle in the area. We also find ridleys, leatherbacks, and greens (in decreasing abundance, respectively). To date we have examined more than 1200 loggerheads, 90 ridleys, 25 leatherbacks, and 9 greens (dead and live combined). We have also recorded positions of loggerheads and leatherbacks observed on aerial surveys. This poster shows the temporal and spacial distribution of dead and live sea turtles from VA waters, addresses probable sources of mortality of turtles, and discusses implications of Chesapeake Bay as a major nursery area for sea turtles.

SEX RATIOS OF HATCHLING LOGGERHEADS, *CARETTA CARETTA*, IN VIRGINIA

Jones, III Bill and J.A. Musick, Department of Biological Science, Head of Vertebrate Biology and Systematics, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

Chesapeake Bay is a major summer foraging area for subadult loggerhead sea turtles. Virginia's shores are the northernmost limit for loggerhead nesting, and incubating nest temperatures may be cooler than in areas to the south. Our aerial survey data suggests up to 10,000 loggerheads migrate into Chesapeake Bay each spring. We have documented up to six loggerhead nests per summer on Virginia's shore, and have monitored the nests and nursery area temperature profiles with Campbell Scientific CR10 dataloggers. Sexes of hatchling and subadult loggerheads were determined utilizing various methods: histology of gonads; testosterone levels in blood, and electrophoresis

ABSTRACTS

of nuclear DNA for male specific fragments. A subsample of sex ratios from loggerhead eggs relocated but incubated in a protected natural area of the natal beach has been analyzed. The sex ratios vary from 36 /0 to 16 /8 in five clutches subsampled. The relation between sex ratios and incubation temperatures will be discussed with respect to nest relocation and conservation strategies.

ARE EPIBIONTS A FACTOR IN POST-MIGRATION MORTALITY IN LOGGERHEAD SEA TURTLES (*Caretta caretta*)?

Keinath, J.A. and J.A. Musick, Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, VA 23062

Radio and satellite telemetry, along with aerial survey data, reveal about 10,000 juvenile loggerhead turtles migrate into and out of Chesapeake Bay from south of Cape Hatteras, North Carolina, each year. Migrational timing is mediated by water temperature. Coincident with the spring arrival of turtles is a major stranding event of up to 100 dead turtles washing ashore during June. Cause of death in over 90% of the stranded turtles cannot be directly determined. Although net entanglement and subsequent drowning has been suggested, lack of external evidence (eg. constriction marks around appendages) and no mass stranding during emigration implicate other reasons for the spring mortality. We suggest death is related primarily to malnutrition when the turtles enter the Bay, and is confounded by epibiotic load. Stomach content analysis supports survey data which show low food resources present during May and June in Chesapeake Bay. Seasonal length - weight analyses show turtles are leanest when entering the Bay, suggesting high energy expenditure during migration. At the end of the season turtles are heavier, supporting our contention Chesapeake Bay is a major foraging ground for young loggerheads. Most of the turtles stranded during the spring are heavily encrusted with epibionts (barnacles, bryozoans, salps, mollusks, and algae most prevalent) and this epibiotic load may produce excessive drag on the turtles during migration. We hypothesize that increased energetic demand produced by the epibionts may be a determining factor in post-immigration mortality.

ABSTRACTS

The following abstracts are from the Annual Joint Meeting of the Herpetologists' League and the Society for the Study of Amphibians and Reptiles (Tulane University, New Orleans, Louisiana, August 5-9, 1990).

DISTRIBUTIONAL ECOLOGY AND STATUS OF THE COW KNOB SALAMANDER, *PLETHODON PUNCTATUS*

Buhlmann, K.A., J.C. Mitchell, C.A. Pague, and R.B. Glasgow, VA Div. of Natural Heritage, Univ. of Richmond, and U.S. Forest Service.

We conducted baseline studies on the ecology and status of *P. punctatus* to develop a preserve design that insures the long-term survival of this rare salamander. This species is restricted to Shenandoah Mt., VA and WV; its range correlated with the Hazelton-Leetonia soil series, an upper elevation soil type. Of the site characteristics we examined, the following 4 appeared to be most important in identifying *P. punctatus* habitat: elevation (>732 m, 87% of sites >960 M), aspect (87% north facing), soil characteristics, and presence of abundant surface cover (rocks). A mark-recapture study revealed that salamanders moved 0-17.3 m over a one-year period. A restricted distribution, narrow habitat characteristics, and limited movements suggested that forest fragmentation may negatively impact this species. A preserve design that protects the range of *P. punctatus* and likely to be implemented utilizes USFS Research Natural Areas (RNA), Special Management Areas (SMA), and corridors designated unsuitable for timber management.

HERPETOFAUNA OF THE VIRGINIA BARRIER ISLANDS: DISTRIBUTION AND BIOGEOGRAPHY

Mitchell, J.C., R. Conant, and C.A. Pague, Univ. of Richmond, Univ. of New Mexico, and VA Natural Heritage Program.

Amphibian and reptile populations of the VA barrier island were censused periodically over 40 yr. Number of amphibians ranged from 0 on small islands to 6 on a large island. Reptiles, not including sea turtles, numbered 2 on the smallest island to 13 on the largest. A

ABSTRACTS

total of 29 species have been recorded, compared to 46 on mainland Eastern Shore; 42% of mainland amphibian fauna, 78% of mainland reptile fauna. The linear relationship of herpetofaunal diversity (S) to island area is significant ($r^2=0.529$, $P=0.017$), however, the relationship to isolation from the mainland is non-significant ($P=0.572$). Removal of Assateague Island from the analysis renders the S-area relationship non-significant ($P=0.121$). Linear relationship of reptile diversity (S_r) to five ecological variables was non-significant in all cases; $\log S_r$ was positively and significantly related only to the number of vascular plant associations, a measure of habitat diversity. Ecological correlations of herpetofaunal diversity differ substantially from that known for rodents on the VA barrier islands and predictions of island biogeography theory. Human Habitation and impacts may account for some of the differences.

FERTILIZATION AFTER REPEATED MATINGS IN THE WOOD FROG, *RANA SYLVATICA*

Pague, C.A., Old Dominion University, Norfolk, Virginia, USA.

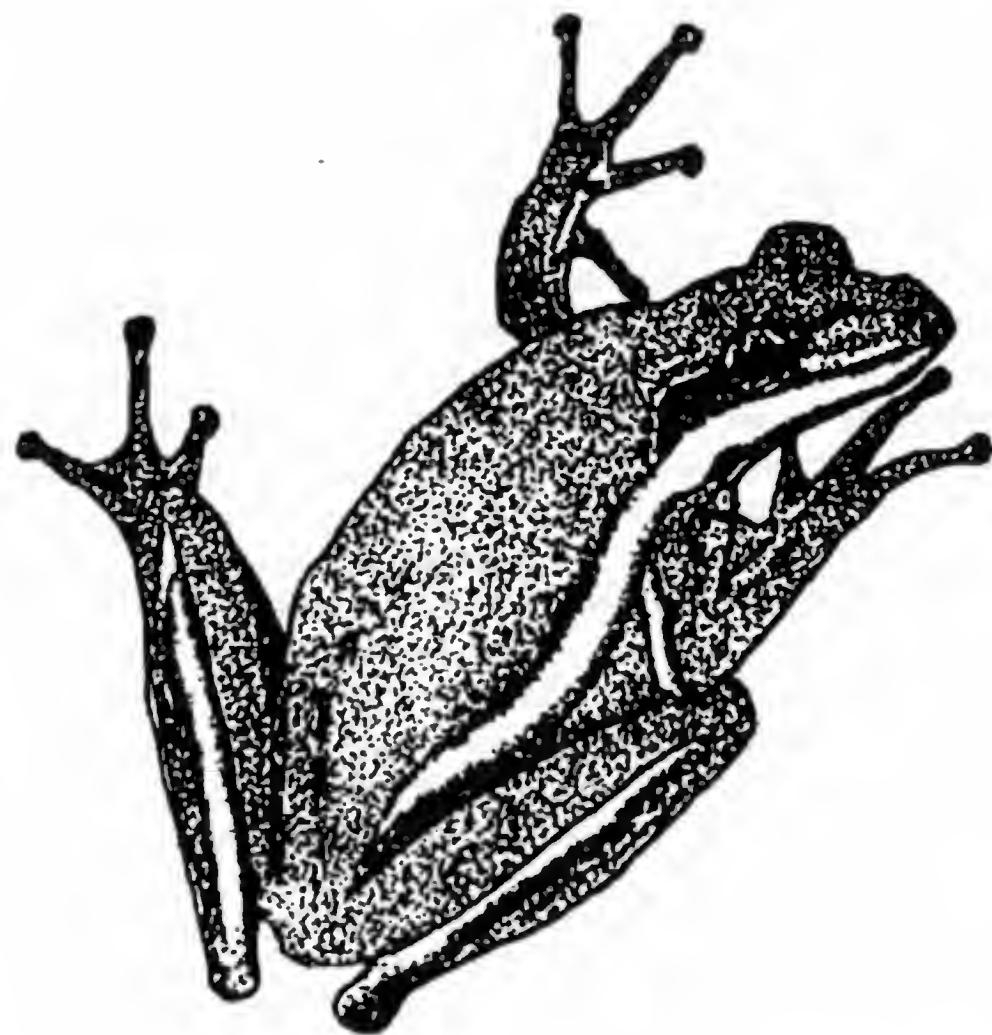
Previous laboratory research suggested that fertilization rates of male *Rana sylvatica* decreased with sequential matings. I tested the hypothesis that male fertility would decline with the number of matings. Amplexing pairs were taken from the field and placed in pond or dechlorinated water in aquaria and allowed to mate. Males mated from 1-6 times. Fertilization rates were determined by direct counting after 24-48 hours of development. The percentage of eggs that were fertilized declined with the number of matings, but not in a linear relationship. Histological examination of the male testes showed a dramatic reduction in sperm after the first mating when compared to unmated males. The possible roles of limited male fertilization capabilities in the development of life history strategies and sexual selection are discussed in view of the facts that male Wood frogs call soon after release and mate again while females mate only once each year.

ABSTRACTS

ORIGINS AND EVOLUTIONARY CONSEQUENCES OF SKELETAL AND SCALE ANOMALIES IN REPTILE POPULATIONS: EXTINCTION MODELS OR "HOPEFUL MONSTERS"?

Schwaner, Terry D., Virginia Museum of Natural History

The Neo-Darwinian/Modern Synthesis view of evolution is that microevolutionary processes shift populations to new adaptive peaks and are sufficient to account for the origin of species and higher taxa without recourse to alternative hypotheses involving macromutations and hopeful monsters. In this way macroevolution could be viewed as the preservation (by differential extinction) of extreme variants in a radiation of lineages. This process may or may not require large amounts of geological time. An idea is presented that the evolution of novel characters could be possible in an instantaneous amount of geological time, if developmental anomalies were preserved by rapid adaptive responses in small, isolated populations. This idea is not new, but a greater awareness of its potential and plausible examples are needed. Evidence suggesting a genetic origin for skeletal and scale anomalies in snakes is presented from comparisons of anomaly frequencies and heterozygosity estimates in tiger snake populations from southern Australia. Given that these anomalies have a genetic basis, I speculate on their pervasiveness and possible importance to the evolution of novel characters in reptiles.



Hyla cinerea

Feb. 1979

CGP

PRESIDENT'S CORNER

We have all read in the newspapers of the recent concern over declining amphibian populations. This seems to be happening on a worldwide basis and for a number of different reasons. My message in this issue of *Catesbeiana* is that we as a regional society can contribute some very important information on this issue.

First, a little background. At the World Congress of Herpetology meetings last September in Canterbury, England a number of people compared notes and came away convinced that amphibians were having serious problems throughout the world. Dr. David Wake then convinced the National Research Council that a symposium was in order and one was subsequently held in February 1990. Things can happen quickly if the right strings are pulled. The contents of this meeting were broadcast widely in all forms of news media.

Most reports detailed specific cases of amphibian declines, and some were even reporting near extinction events. No one cause was singled out, although loss of habitat is an important contributor to the declines of many species. Other causes noted were acid rain, pesticide release, agricultural practices, land-use changes, and introductions of exotic (non-native) species. An example of the latter is the predation on native California frogs by the introduced bullfrog.

An important concept that appeared in most reports was that amphibians were particularly sensitive bioindicators because of their permeable skins, dual life histories (aquatic and terrestrial phases), patterns of embryonic development, and population and community ecology. Amphibians may be the vertebrate most sensitive to alterations in the quality of a habitat or ecosystem. They may be affected by perturbations long before we humans can detect them.

There is a geographical component to all of this, too. Some areas are experiencing obvious problems while others are not. For example, populations of ranid frogs in western North America are declining at an alarming rate, whereas those in the southeast are apparently not. Western authorities attribute the losses to several factors, including introduced species and acid rain. One species, *Rana onca* may even be extinct. Populations in Central America are being lost simply because of the massive loss of habitat there.

Several programs are being implemented immediately and numerous researchers are staking out territories (geographic and financial). Because this problem is directly correlated with the global biodiversity issue, there is a strong push for Congress to establish a National Institutes for the Environment.

One obvious problem with all this is that there are few long term data sets to evaluate long term natural changes. Historical data are needed so that changes perceived now can be properly evaluated. Only one long-term data set is available, that from the Savannah River Site near Aiken, South Carolina (see my section in the VHS Newsletter, No. 2). This one, however, demonstrates that the cyclic changes seen over some 20 years are attributable to natural causes, e.g., drought. No data set is available from earlier this century.

Regional societies can play a major role in the establishment of a baseline data set. They have the manpower and regional focus to accomplish a task that individual researchers would find impossible. Such a baseline data set, maintained over a long period of time, would allow for future evaluations of population changes and declines.

I am unaware of any major decline in any of our amphibian populations, other than that directly attributable to habitat loss to agriculture or urban development. However, we have yet to fully evaluate our frogs and salamanders from that perspective.

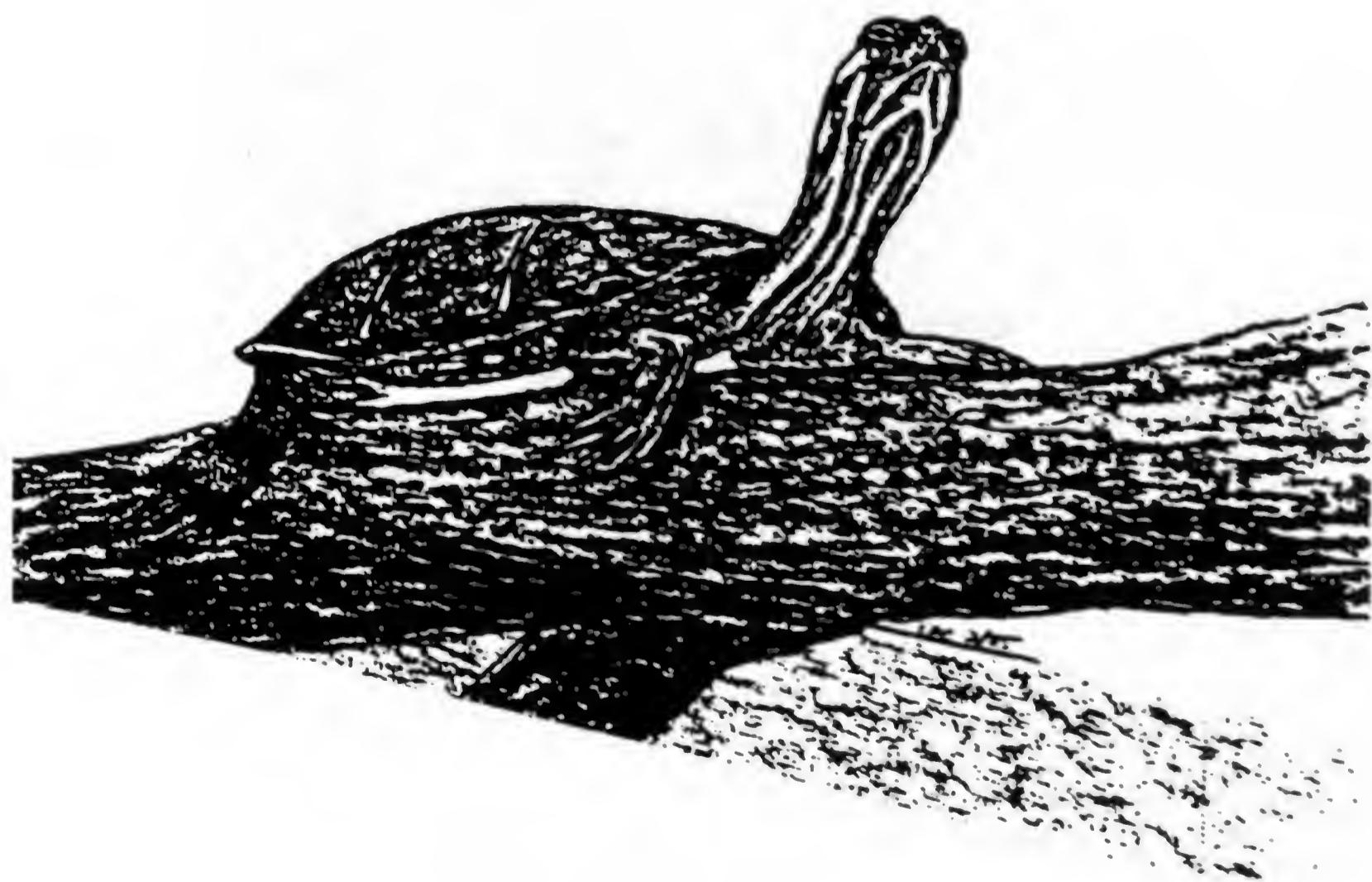
I would like to propose that the VHS establish a program to obtain accurate baseline data on Virginia's amphibian populations. This can be done in conjunction with our Spring field trip meeting. It can be done using our Field Research Grant funds. It would obviously need 2-3 key and dedicated individuals to head up this program to make it work. You do not have to be a professional to do it. I know a couple of people who can quickly train you to take the appropriate kinds of data. The most important skills are communication, organization, and drive to accomplish the task.

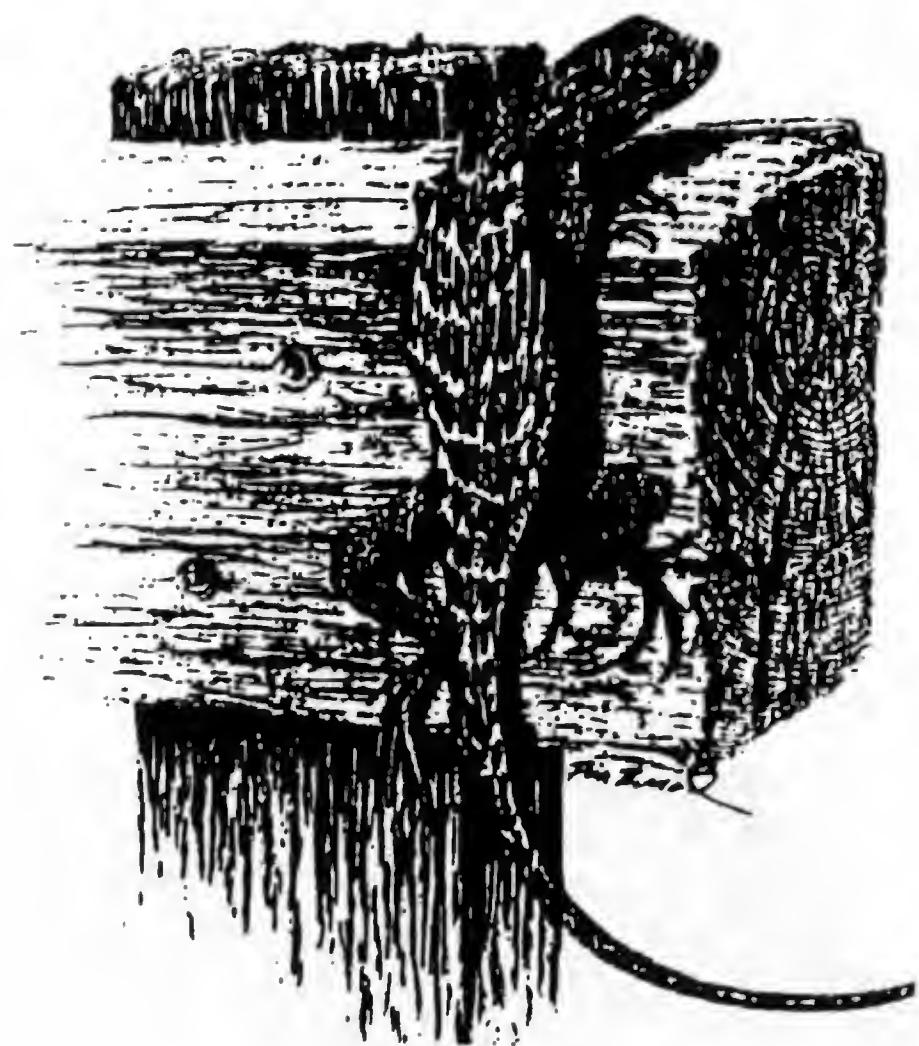
I might also add that this kind of conservation effort would correlate well with our educational efforts. The VHS is striving to reach out to more people, young people especially, in a way that promotes the education and conservation of amphibians and reptiles. This will be evident in our Fall meeting.

PRESIDENT'S CORNER

I would like to have informal and formal discussions at the next meeting to determine the feasibility of a monitoring program on amphibian populations. Please let me know if you are willing to participate.

Joseph C. Mitchell
President, VHS
August 28, 1990





MINUTES OF SPRING 1990 VHS MEETING

Thirty herp lovers (which included thirteen enthusiastic young people) attended the Spring meeting held at Holiday Lake 4H Camp in Appomattox, April 7, 1990. President Joe Mitchell opened the meeting at 8:00 p.m. Secretary/Treasurer Ron Southwick presented the Treasurer's report. Balance on hand as of April 7, 1990 was \$1871.64. The 1990 VHS membership was at 113 representing 19 states and Canada. Ron Southwick recognized Doug Eggleston for his efforts in recruiting several new members to the VHS in the past year.

Old Business

Joe Mitchell gave a report on the proposed VHS poster. The cost was estimated at over \$3000.00. The photo for the poster would be donated by Lynda Richardson. Requests for "outside" grants to help fund the poster had been unsuccessful thus far. One anonymous donation for \$100.00 was received at the meeting. Joe promised a progress report in the Fall.

Joe reported that there were no applications for the VHS Research Grant for 1990.

Because Dale Brittle was unable to attend the meeting, the "Herp Education Booklet" was only briefly discussed. Ron Southwick received a copy of the Virginia Living Museum's "Herp Activity Booklet" and will forward to Dale.

Editor's Report: Paul thanked everyone who contributed material for the most recent issue of *Catesbeiana*. Paul requested additional art work for the Bulletin. Vice President Kurt Bulhmann asked that members send in any field notes to be included in *Catesbeiana*.

New Business

Joe brought up the idea of starting a VHS newsletter. All members present agreed that a newsletter would be a good idea. Joe introduced Doug Eggleston who would assist in putting together the newsletter. The newsletter would be made available to current members at no charge, and would probably come out on a quarterly basis. There was some discussion on format, fees, and the formation of a newsletter committee.

Joe brought up the matter of newsletter exchange with other herp groups. Joe said that he had boxes of old newsletters received by the

Society and asked what to do with them. Doug Eggleston suggested we auction them off at one of our meetings. Kurt Bulhmann suggested we incorporate non-copyrighted material from other newsletters into the VHS newsletter. Joe, Kurt, Doug, and Ron will discuss at a later date a journal/newsletter exchange. There was considerable discussion by Kurt and JoAnne Pierce about sending the newsletter to schools. Kurt will follow up on this good suggestion.

Joe mentioned that regional herp clubs were "springing" up in several locations suggesting a lot more interest in herps statewide. This brought up the matter of the new regulations on collecting permits required by the State. Joe stated that although the permit requirement was needed, he listed several potential problems with the new permitting process for the herp collector. Joe asked the membership to inform him of any problems they have with the new permit requirements. He will be meeting with the Department of Fish and Game representatives to discuss this matter.

Doug Eggleston brought up the fact that we did not have a "Life" membership category listed on the membership application form. Paul Sattler will make this addition in future issues of *Catesbeiana*.

The Fall meeting site was discussed, and Joe asked members to think about a good location. We need a facility that can accommodate "live" animals, have room for a paper session and business meeting, and be able to have local advertising to attract people (especially young people) to the meeting.

Joe showed the VHS photo album he is putting together. Anyone having snapshots of past VHS activities are urged to send them to Joe for inclusion.

Business meeting adjourned at 9:20 p.m.

Respectfully submitted,

Ron Southwick,
Secretary and Treasurer

VIRGINIA HERPETOLOGICAL SOCIETY
TREASURER'S REPORT
Spring 1990 Meeting

The balance in the bank reported at the Fall Meeting was \$998.44.

Expenditures since that time were:

10/6/89	ck.#106	Fall meeting expenses	50.00
01/5/90	ck.#107	Holiday Lake 4H	25.00
02/5/90	ck.#108	Postage	25.00
03/8/90	ck.#109	<i>Catesbeiana</i> printing	154.29
3/16/90	ck.#110	Postage	52.50
04/5/90	ck.#111	Postage check charge	55.00 .80

Total Expenditures	<u>\$362.59</u>
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Receipts from dues and interest	<u>\$735.79</u>
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Balance on hand as of 4/6/90	<u>\$1371.64</u>
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The Society has a current membership of 110 as of 4/6/90.

Respectfully submitted,

Ron Southwick
Secretary and Treasurer

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BACK ISSUES OF *CATESBEIANA*

<u>Volume</u>	<u>Year</u>	<u>Issue No.</u>	<u>Number Available</u>
1	1981	1	0
2	1982	1	1
		2	23
3	1983	1	2
		2	5
4	1984	1	2
		2	0
5	1985	1	1
		2	3
6	1986	1	0
		2	0
7	1987	1	11
		2	48
8	1988	1	18
		2	9
9	1989	1	14
		2	12
10	1990	1	60

Available back issues of *Catesbeiana* are \$3.00 per issue (includes postage). Send requests to:

Ron Southwick
Secretary/Treasurer
5608 Parkland Court
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ANNOUNCEMENT

FALL 1990 MEETING OF THE VIRGINIA HERPETOLOGICAL SOCIETY

The Fall 1990 VHS meeting will be held on October 20 at Maymont Park in Richmond, VA. See the following pages for directions and map.

Meeting Place: Nature Center, Maymont Park

Schedule: Saturday, October 20

10:00 - 11:30	Captive Herp and Identification Workshop
11:00 - 12:00	Business Meeting
12:00 - 1:00	Picnic Lunch
1:00 - 4:00	Paper Session (includes 1-2 new videos)
4:00 - 6:00	Social

Notes:

1. Please bring several of your favorite captives to the workshop to be viewed and discussed by you and the young people attending. No venomous snakes, please.
2. There are no eating locations next to the park, so be prepared to eat picnic style with the rest of us. Several restaurants are within driving distance though.
3. The paper session is standard: Send the title of your talk to Joe Mitchell by October 10, 1990.
4. Bring a little something to share, like food, munchies, or drinks to the social.

Miscellaneous:

A VHS bumper sticker will be available for free to each new member. Bring your friends.

FALL 1990 MEETING

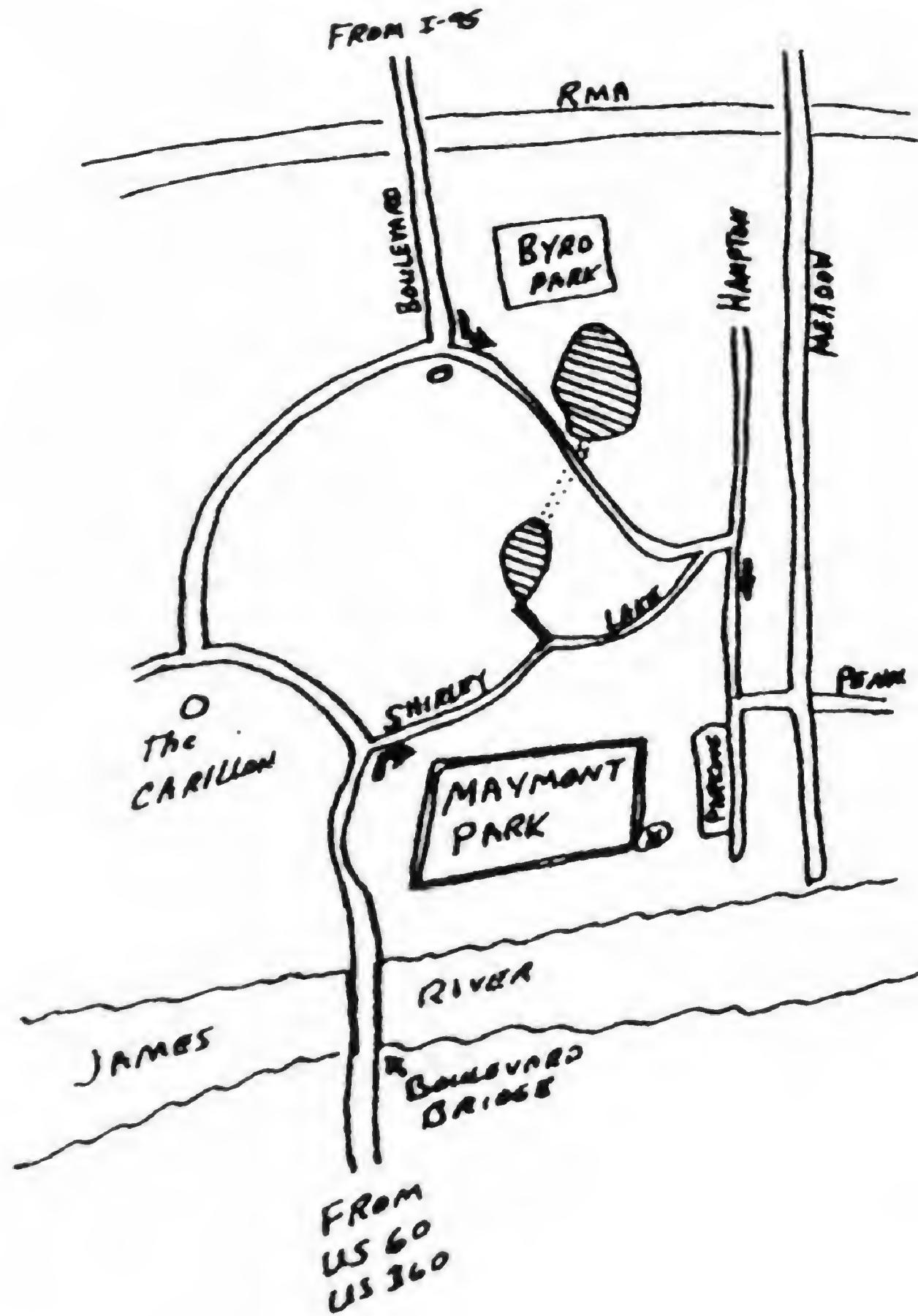
Directions to Maymont Park in Richmond, VA

From points north of the James River: Take Interstate 95 to the Boulevard Exit (also the exit for the Diamond and the Science Museum of Virginia); proceed southward past Broad St. and over the Downtown Expressway (I-195 = RMA); the Boulevard will seemingly dead end at the Columbus statue (it turns right); turn left into Byrd Park and follow green Maymont signs to Hampton Street (bearing left towards lakes); turn right on Hampton Street; go about 0.25 mile and you will see Maymont parking lot; the Nature Center is the second building on the left.

From points southwest of the James River: Take US Rt. 60 or US Rt. 360 to VA Rt. 161 (Boulevard north of 360; Broadrock Rd. south of 360); turn left (north) and proceed across the Boulevard Bridge (\$0.20 toll); turn right on Shirley; bear left and take a right on Amelia and a right on Hampton into parking area.

From points southeast of the James River: Take I-95 north to just north of the James River; take the I-195 (Downtown Expressway) exit off the right lane; proceed to the Meadow Street exit; turn left on Meadow St.; follow Meadow to Pennsylvania; turn right and proceed to the Maymont Park parking lot. Follow signs to Nature Center.

ANNOUNCEMENT



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MEMBERSHIP APPLICATION

I wish to initiate renew membership in the Virginia Herpetological Society for the year 19_____.

 I wish only to receive a membership list. Enclosed is \$1.00 to cover cost.

Name _____

Address _____
_____ Phone _____

Dues Category: Regular Family Under 18 Life
(\$5.00) (\$7.50) (\$3.00) (\$150)

Interests: Reptiles Amphibians Captive Husbandry
 Distribution Research
 Specifically _____

Make checks payable to the Virginia Herpetological Society and send to the treasurer: Ronald Southwick, 5608 Parkland Ct., Virginia Beach, VA 23455.

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Field Notes

This section provides a means of publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other areas are welcomed. Reports can be on single species or fauna from selected areas, such as a state park or county. The format of the reports is TITLE (species or area), COUNTY AND LOCATION, DATE OF OBSERVATION, OBSERVERS, DATA AND OBSERVATIONS. Names and addresses of authors should appear one line below the report. Consult published notes or the editor if your information does not readily fit this format.

If the note contains information on geographic distribution, a voucher specimen or color slide should be sent for verification and deposited in a permanent museum or sent to the Virginia Herpetological Society. Species identification for observational records should be verified by a second person.

The correct citation format: Croy, S. 1984. Field Notes: *Lampropeltis getulus niger*. *Catesbeiana* 4(1):12.

Herpetological Artwork

Herpetological artwork is welcomed. If the artwork has been published elsewhere, we will need to obtain copyright before we can use it in an issue. We need drawings and encourage members to send us anything appropriate, especially their own work.